

PORTABLE INFORMATION PROCESSING APPARATUS WITH AN IMPROVED ACOUSTIC EFFECT

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to a portable information processing apparatus such as a notebook personal computer having an improved acoustic effect.

2. Description of the Related Art

In information processing apparatus such as computers in recent years, functions which allow processing of images and sound called multimedia, data communication and so forth, are installed also in portable information processing apparatus. In such a situation, in regard to sound, a notebook personal computer which is a kind of conventional portable information processing apparatus has developed from a type which includes, as in an old apparatus in which a speaker began to be installed, a buzzer or a like element which merely generates beep or warning sound to another type which is equipped with an acoustic apparatus which outputs sound of high quality such as stereo sound using a CD for music, a CD-ROM or a like medium as a sound source while it is successively equipped with higher functions.

However, since portability and reduction in weight are required for a portable information processing apparatus, a speaker built in a portable information processing apparatus is designed to fall within a range of restrictions. In a conventional notebook personal computer, a speaker of a small size is mounted in an upwardly directed condition in a body of the notebook personal computer as seen in FIG. 1. Referring to FIG. 1, reference numeral 2 denotes a body of a notebook personal computer having a keyboard 4, and a display unit 6 is mounted for pivotal motion on the body 2. A speaker 8 is mounted in an upwardly directed condition in the body 2, and an opening formed in a front wall of the speaker 8 is closed up with a cover 10 which has a plurality of holes 11.

Since a notebook personal computer has a small speaker mounting space, a higher acoustic effect must be obtained with a speaker of a small size. However, where a speaker of a small size is mounted in an upwardly directed condition in a body as in the conventional notebook personal computer described above, high-pitched sound which has a high directivity is released upwardly. Thus, the conventional notebook personal computer has a problem in that an operator of the personal computer listens to sound from which high-pitched sound has been removed.

Japanese Patent Laid-Open Application No. Heisei 8-171477 discloses a construction wherein a speaker is mounted in a horizontally laid condition in a body and is used in an uprightly erected condition when necessary. However, mounting of the speaker for pivotal motion on the body gives rise to a problem in handling of a cable connected to the speaker. Further, since the speaker is small in size and low in weight, the possibility is high that vibrations of the body may occur when great sound is produced from the speaker or sound produced has a resonance frequency.

SUMMARY OF THE INVENTION

Accordingly, it is an object of the present invention to provide a portable information processing apparatus which prevents removal of high-pitched sound with a simple construction and exhibits an improved acoustic effect.

In accordance with an aspect of the present invention, there is provided a portable information processing

apparatus, comprising a body having an opening at a top wall thereof, a display unit mounted for pivotal motion on the body, a speaker mounted in an upwardly directed condition in the body below the opening, a baffle mounted in the opening for pivotal motion between a first position in which the baffle substantially closes up the opening and a second position in which the baffle is inclined by a predetermined angle with respect to the top wall of the body, a guide member mounted for movement between an advanced position and a retracted position in the body, biasing means for biasing the guide member to the advanced position, a first engaging projection secured to the display unit for engaging, when the display unit is closed on the body, with the guide member to move the guide member to the retracted position against a biasing force of the biasing means, and motion conversion means for converting linear motion of the guide member into pivotal motion of the baffle to move the baffle to the first position when the guide member is moved to the retracted position but move the baffle to the second position when the guide member is moved to the advanced position.

Preferably, the motion conversion means includes a flange secured to the baffle and having an elongated hole therein, and a pin secured to the guide member and inserted in the elongated hole. Alternatively, the motion conversion means may include a rack secured to the guide member, and a pinion secured to the baffle and held in meshing engagement with the rack.

When the display unit is opened (erected uprightly), the first engaging projection is spaced away from the guide member, and consequently, the guide member is moved to the advanced position by the biasing means. Consequently, the baffle is pivoted to the second position in which it is inclined by the predetermined angle with respect to the top face of the body. As a result, since sound from the speaker is reflected toward an operator by the baffle, high-pitched sound components are not removed from the sound, and consequently, the operator can listen to sound of high sound quality.

In accordance with another aspect of the present invention, there is provided a portable information processing apparatus, comprising a body having an opening at a top wall thereof, a display unit mounted for pivotal motion on the body, a speaker mounted in an upwardly directed condition in the body below the opening, a plurality of baffles mounted in the opening for pivotal motion between a first position in which the baffles substantially close up the opening and a second position in which the baffles are inclined by a predetermined angle with respect to the top wall of the body, and a plurality of biasing means for individually normally biasing the baffles toward the respective second positions, the baffles being pivoted, when the display unit is closed on the body, to the respective first positions against biasing forces of the biasing means.

The above and other objects, features and advantages of the present invention and the manner of realizing them will become more apparent, and the invention itself will best be understood, from a study of the following description and appended claims with reference to the attached drawings showing some preferred embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a sectional view showing a speaker mounting structure of a prior art;

FIG. 2 is a schematic perspective view of a notebook personal computer according to an embodiment of the present invention;